

FURTHER NOTES ON AUSTRALIAN COLEOPTERA WITH  
 DESCRIPTIONS OF NEW GENERA AND SPECIES.  
 NO. XLI.

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COPRIDES.

COPTODACTYLA.

In Deutsch. Ent. Zeitschr. (1909) Herr Felsche expressed the opinion that my *C. Baileyi* and *ducalis* are females of *C. glabricollis*, Hope. They are, however, perfectly distinct species. As regards *C. Baileyi*, Herr Felsche says, "Characters distinctive from *glabricollis* are '*tibiis anticis brevibus, apice acuminatis, externe inermibus.*' This sculpture is such for a *Coprid* that one can safely assume the author has had before him a specimen of *C. glabricollis* with worn tibiæ." In describing the characters that distinguish one species from another it is, I take it, usual that the author mentions first the character which he regards as the important one. A reference to my note (Proc. Linn. Soc., N.S.W., 1889, p. 1251) pointing out the distinctive characters of *C. Baileyi* will show that it commences thus: (*C. Baileyi* is) "different from it (*i.e.*, *C. glabricollis*) in the clypeus being evenly rounded in front without any emargination whatever." It is quite true that I proceeded to refer to the tibiæ as being without teeth, and that Herr Felsche's opinion that that is not a valid specific character is no doubt correct. Subsequent study of *Lamellicorn Coleoptera* led me to the conclusion Herr Felsche indicates, and in fact I have myself long ago expressed it (*e.g.*, Trans. Roy. Soc., S.A., 1904, pp. 286 and 287), *viz.*, that difference in the external form of tibiæ "may be due to some attrition to which the parts in question have been exposed." I have before me a long series of both sexes of *C. glabricollis*, Hope, from numerous places in Northern Australia, and have no hesitation in saying that the clypeal character I referred to as distinctive is perfectly reliable. However, I will now add that in *C. Baileyi* the clypeus is very much shorter than in *glabricollis* (its lateral outline running out a much less distance from the hind level of the eyes and being much less oblique, so that the widest part of the head is considerably narrower than the front margin of the prothorax). The strigose sculpture of the head does not occupy

nearly so large an area as in *glabricollis*, the greater part of that segment being occupied by a smooth gibbosity which is altogether absent in *glabricollis*. The outline of the clypeus has not the upturned margin that is present in *glabricollis*. Although these additional particulars are not needed to distinguish the two species, for the clypeal distinction mentioned in my description is quite sufficient, it is well doubtless that my attention is drawn to the matter, as it cannot be denied that I described *C. Baileyi* somewhat briefly, contenting myself with the mention of characters that clearly distinguish that species from those previously described in the genus.

*C. ducalis*, too, is very satisfactorily distinct from *glabricollis*. Apart from its size and build, which are notably larger and more massive than in any of the numerous specimens before me of *glabricollis*, it is at once distinguishable by the striæ of its elytra being all but without puncturation—those near the suture absolutely without—the lateral ones bearing extremely small punctures. It may be added that its pronotum is considerably less convex in the longitudinal direction (*i.e.*, viewed from the side) than is that of *glabricollis*.

I have before me what is evidently the female of one of the two Australian species of *Coptodactyla* described by Herr Felsche in the memoir quoted above, but as their author does not differentiate the females of the two, merely saying that they are altogether similar, it is impossible to give a name to my specimen. Is it not probable that the females referred to represent only one of his species, and that the female of the other remains undiscovered?

## SERICOIDES.

### HETERONYCIDES.

#### HETERONYX.

A recent visit to the Macleay Museum in Sydney has enabled me to supply information concerning two of the species mentioned in *Trans. Roy. Soc., S.A.*, 1910, p. 230, as requiring further study. They are as follows:—

*H. scutatus*, Macl. A member of Group VIII. In the tabulation of that Group (*Trans. Roy. Soc., S.A.*, 1910, p. 191) it stands beside *flavus*, Blackb., under "LL." line 8), and can be distinguished from it thus:—

- |   |                     |
|---|---------------------|
| M. Punctures of pronotum well defined<br>and quite strongly impressed   | ... flavus, Blackb. |
| MM. Punctures of pronotum extremely<br>fine and faint, scarcely visible | ... scutatus, Macl. |

*H. marginatus*, Blackb., belongs to Group VIII. In the tabulation (*loc. cit.*, p. 192) it stands beside *collaris*, under "MM." (line 1), and can be distinguished from it thus:—

N. Base of prothorax wider than base of elytra	... ..	<i>collaris</i> , Blackb.
NN. Base of prothorax narrower than base of elytra	... ..	<i>marginatus</i> , Blackb.

#### STETHASPIDES.

In my recent Revision of the members of this Group of *Lamellicornes* I accidentally omitted detailed treatment of the Australian genera of the aggregate called *Stethaspides* by Lacordaire, and by him regarded as a subsection of the *Sericoides*. The first part of my Revision (Trans. Roy. Soc., S.A., 1905) contains mention (on p. 281) of that aggregate, and distinguishes it from the other Australian aggregate of *Sericoides*; but when I reached the conclusion of the latter (in the Transactions for last year) I unfortunately forgot the genera of *Stethaspides*, and also in introducing (Trans. Roy. Soc., S.A., 1908, p. 364) the group of *Sericoid* genera with claws not simple referred to them as completing my Revision instead of as completing my Revision of one of the two main aggregates into which I had divided the Australian *Sericoides*. I therefore proceed now to consider the two known Australian genera of *Stethaspides*. These have been attributed to three genera: *Stethaspis*, *Colymbomorpha*, and *Phyllococerus*. Mr. Waterhouse—the author of *Phyllococerus*—characterized the genus without specifying what he regarded as its distinctions from *Colymbomorpha*, but an examination of the diagnosis indicates the following characters (only) as likely to have been considered by him to be generic, *viz.*:—Antennæ 9-jointed, with a 3-jointed club; clypeus somewhat deeply emarginate in middle. I have the two forms before me, and cannot find any other distinction likely to be generic between them. As regards the number of antennal joints, Blanchard, the author of *Colymbomorpha*, described the antennæ of that genus quite correctly as 9-jointed; while Burmeister, by attributing Blanchard's *Colymbomorpha* to *Calonota*, and stating that the antennæ of that genus have only 8 joints, numbered the antennal joints of *Colymbomorpha* incorrectly. It is possible that Mr. Waterhouse accepted Burmeister's statement as correct, and therefore regarded "9-jointed antennæ" as a character differentiating his genus from *Colymbomorpha*, though I think this unlikely. There remain, therefore, as probably relied on by Waterhouse, the number of joints in the antennal flabellum and the form of the clypeus. In *Colymbomorpha* the flabellum has five joints in both sexes (the first two of them very short in the female, which was evidently the sex

known to Blanchard), while the flabellum of *Phyllococerus* has only three joints. I am of opinion that neither the number of joints in the antenna or its flabellum, nor the form of the clypeal outline, is a character of more than 'specific value among the Australian *Sericoides*, and therefore must regard *Phyllococerus* as a synonym of *Colymbomorpha*. The tabulation in Trans. Roy. Soc., S.A., 1905 (p. 281), differentiates these insects and *Stethaspis* from the other Australian *Sericoides*. The former two are from Western Australia.

The third genus referred to above (*Stethaspis*) is really very close to *Colymbomorpha*, but the different facies and very much larger size of its species differentiate it strongly, for practical purposes. It is not so easy, however, to indicate a good structural difference. Burmeister, as mentioned above, merged *Colymbomorpha* in *Calonota*, and stated the number of its antennal joints (incorrectly) as eight. He distinguished it from *Stethaspis* on that character. Lacordaire placed the two genera in distinct "subtribes" of *Melolonthides*, attributing *Stethaspis* to the "true *Melolonthides*," which was certainly a mistake, as its ventral segments are certainly not formed as in that subtribe, nor are its front coxæ transversal. Blanchard placed *Stethaspis* in the *Rutelides*, quite incorrectly, since the claws of its species are not unequal. There can be no doubt that Burmeister was right in placing it near *Colymbomorpha* in the Sericoid group. It is, however, distinguished from *Colymbomorpha* by the first four joints of its tarsi being fringed beneath more or less closely with long hairs and the apical joint with stout bristles. This is, I think, a valid generic character in the Australian *Sericoides*. It may be added that in *Colymbomorpha* the labrum projects beyond the clypeus, so as to be visible from above, while in *Stethaspis* it is completely hidden (viewed from above) under the clypeus. This, however, is not in itself a valid generic difference in the *Sericoides*.

#### STETHASPIS. (1)

So much mention has been made of colour in the original descriptions of the species of this genus, and the species are so variable in colour, that it is difficult to arrive at any clear appreciation of the distinctive characters. All the Australian species except *nigrescens*, Blanch., and *lætus*, Blanch., are described as "olivaceous," or "olive-green." *Lætus* is called "*totus læte vividiflavescens*," and is said to have green legs.

(1) In Ann. Nat. Hist., 1903, p. 303, Mr. Arrow showed conclusively that the name *Xylonychus* used for this genus by Lacordaire and other authors (also in Masters' Catalogue) is a synonym of *Stethaspis*.

Burmeister mentioned *lætus* as perhaps identical with his *metrosideri*, thus implying that the legs of his specimen are green. I have not seen any species of *Stethaspis* (except *nigrescens*) which agrees in colour with the description of any one of them. The species that I cannot doubt is *Eucalypti* is, when fresh, of a clear green colour, with the legs light ferruginous, and in many specimens the extreme lateral margins and the apex of the elytra yellow. My unique specimen of the insect that I believe to be *S. metrosideri* (with which I think *lætus* is probably, as Burmeister conjectures, identical) has head, prothorax, scutellum, and legs testaceous-ferruginous, elytra olivaceous, sterna mostly pale-ferruginous, abdomen coppery. My specimens of *piliger*, Blanch., have head, prothorax, and scutellum varying from olive-brown to a distinct green, elytra clear green with narrow ferruginous margin, legs and antennæ ferruginous. An old, and probably badly-kept, specimen agreeing otherwise with *Eucalypti* is of a dull pitchy-olive colour, with legs pitchy-ferruginous, and another, probably immature, is pale grass-green. It appears to me, therefore, probable that the colours of the *Stethaspides* are liable to fade or otherwise change under various circumstances, and that in respect of most of the species they should be disregarded for purposes of identification. As there is no species (in the genus) of which the type is in Australia I am obliged to rely upon descriptions for the identification of all the species, but fortunately there are descriptions (at least fairly good) of all of them, and I am of opinion that I have them all before me (except *lætus*, if it is a valid species) and also an undescribed one. Under these circumstances a short note on each of the *Stethaspides* to set forth the grounds of my identification, in spite of colour discrepancies, seems desirable. *Stethaspides* (under the name of *Xylonychus*) bear six specific names in Masters' Catalogue, and I believe they include all the names correctly attributable to Australian members of the genus. One of these names (*Orpheus*, Fauv.), however, seems to have found its way into the Catalogue by mistake, since "New Caledonia" is the habitat its author assigned to it.

X. *Eucalypti*, Boisd. The original description is of little value, but nevertheless does not altogether agree with the insect commonly regarded as *Eucalypti*, inasmuch as it contains the phrase "*supra hirsutus*." Blanchard describes *Eucalypti* in seven words, "*Viridis, elytris olivaceis, pilis niveis majoribus densioribus*" (apparently a mere indication of differences from his *lætus*). Burmeister says of it "*supra glaber*," but in the notes following the diagnosis says that there are "Borsten" on the elytra here and there between the

punctures. Probably Boisduval used an unduly strong expression in calling the insect before him "*supra* 'hirsutus.'" At any rate, I have not seen any *Stethaspis* the elytra of which are more hairy than those of *Eucalypti* as Burmeister describes it. *S. piliger* is rightly called "hirsutus" in respect of its *pronotum*, but it is a Tasmanian species, and there can be little doubt that Boisduval's type of *Eucalypti* was from the neighbourhood of Sydney. I conclude, therefore, that the descriptions (of *Eucalypti*) of the authors mentioned all refer to the large green *Stethaspis* which occurs commonly in Victoria and New South Wales; fresh specimens of which always have, as Burmeister says, long, fine, erect hairs, very thinly distributed about the base and apex of the prothorax and between some of the punctures on the elytra, and also very sparsely placed short, white, adpressed hairs in single rows in the elytral striæ. All this pilosity is very easily rubbed off.

*X. metrosideri*, Burm. I have little doubt that a *Stethaspis* which I met with on the Blue Mountains is this species. Its differences in colour I have already referred to. Its author describes *metrosideri* as having 16 elytral striæ, and in describing *piliger* says that it has 14 striæ. I can count 16 striæ on the Blue Mountains specimen only by including two short and obscure striæ close to the apex in a part where in *piliger*, and also in *Eucalypti*, there is only confused puncturation. Burmeister does not, I think, attribute much importance to this character, as he does not allude to the number of elytral striæ in enumerating the differences between *metrosideri* and *Eucalypti*, and he could hardly fail to include it if there were a difference in the number of well-defined entire striæ, for that would be a much stronger and more conspicuous distinction than any that he specifies. He says that in *Eucalypti* the clypeus is more closely punctulate, that the long erect hairs of the upper surface and ventral segments are wanting in *metrosideri*, and that the hair fringes of the legs are longer and the tarsal bristles feebler in *Eucalypti*. The specimen before me, which I take to be *metrosideri*, presents all the above-mentioned differences from *Eucalypti*. It is an extremely good, well-preserved specimen, and therefore I have no doubt that the absence of erect pilosity on the dorsal surface and the ventral segments is a valid specific character. Burmeister does not mention in comparing the species that the transverse prominence near the apex of the elytra is evidently better defined and more carina-like in *metrosideri* than in *Eucalypti*, though in the description of the former he mentions it as very conspicuous. Another character of *metrosideri* omitted by Burmeister (if

my identification of that insect is correct) consists in the fine, adpressed, scale-like, white hairs in the elytral striæ running in double rows; but this would probably be noticeable only in a very fresh specimen.

*S. latus*, Blanch. It is not unlikely, as Burmeister says, that his *metrosideri* is identical with this species, in which case Blanchard's name has priority; but the colouring is so entirely different, and there are so many other small discrepancies between the descriptions, that it would not be wise to drop either name without further evidence. It is much to be desired that the types be compared. Blanchard says that the pronotum of *latus* is "*dense punctatus*," while the prothoracic puncturation of *metrosideri* is only mentioned as being much more sparse than that of the clypeus. In the species regarded by me as the latter, the pronotum certainly ought not to be called "closely" punctulate. Also "*abdomine albido-piloso*" seems inconsistent with identity with *metrosideri*, of which its author expressly notes that the abdomen is devoid of erect hairs—having only short, adpressed, scale-like hairs—which is the case in the species that I believe to be *metrosideri*. Pending further evidence I therefore retain both names, and in tabulating *latus* fall back for a distinction on the statement that its legs are green, which—if it is a good species—is not unlikely to be a valid character, as among all the many examples of *Stethaspis* before me there is not one with green legs.

*S. piliger*, Blanch. This is a readily identifiable species, and needs no special remarks.

*S. nigrescens*, Blanch., is also readily identifiable.

The following table will show characters distinctive of the known Australian *Stethaspides*, including a new species, the description of which follows the table:—

A.	Legs not green.	
B.	Flabellum of antennæ of male not, or scarcely, longer than the preceding joints together (colour not black).	
C.	Erect hairs of pronotum at most very few and far between.	
D.	Ventral segments bearing long erect hairs	... .. Eucalypti, <i>Boisd.</i>
DD.	Ventral segments devoid of long erect hairs	... .. <i>metrosideri</i> , <i>Burm.</i>
CC.	Pronotum with dense erect pilosity.	
D.	Punctures of the inner 3 striæ of the elytra equal (colour brown)	... .. <i>monticola</i> , <i>Blackb.</i>

- DD. Punctures of 1st and 3rd elytral striæ much smaller than of 2nd (colour of elytra green) ... .. piliger, *Blanch.*
- BB. Flabellum of male antenna notably longer than the preceding joints together (colour black) ... .. nigrescens, *Blanch.*
- AA. Legs green ... .. lætus, *Blanch.*

*S. monticola*, sp. nov. Supra pallide vel obscure brunnea, subtus nigra vix viridescens, palpis antennisque (harum flabello nonnullorum exemplorum dilutiori excepto) clypeo pedibusque dilute vel obscure ferrugineis; tota (elytris sparsim exceptis) dense pilosa; clypeo antice parum emarginato, crebre rugulose punctulato; fronte pronotoque minus subtiliter sat crebre punctulatis; hoc quam longiori ut 20 ad 11 latiori, antice fortiter angustato, lateribus (superne visis) fere rectis (a latere visis pone medium sinuatis), basi sat fortiter bisinuata; scutello puncturis sparsis impresso; elytris paullo ante apicem transversim obtuse prominentibus, fortiter punctulato-striatis, striis pilis brevibus sat adpressis seriatim sparsim instructis; pygidio crebre subtilius ruguloso; corpore subtus subtiliter crebre (abdomine minus crebre) punctulato.

Maris antennarum flabello quam articuli ceteri conjuncti manifeste breviori, articulo 4<sup>o</sup> intus spiniformi.

Feminæ antennarum flabello quam maris, et illius articulo basali quam ceteris, multo brevioribus; antennarum articulo 4<sup>o</sup> haud spinifero. Long., 9-10 l.; lat.,  $5\frac{1}{2}$ - $5\frac{3}{4}$  l.

A single example of this insect occurred to me on the Victorian Alps, flying in the sunshine, and recently Mr. H. J. Carter has sent me several specimens taken by him on Mount Kosciusko. The latter are all darker in colour than the former, though one of them is distinctly lighter than the other. The Victorian specimen has much more numerous short hairs in the elytral striæ than those from New South Wales; in fact, they run in regular series in all the striæ, while in those from New South Wales there are only a few here and there to be seen. My specimen was pinned and mounted at once when taken. The pilosity of all the *Stethaspides* of which I can speak from experience is so easily rubbed off that I think immediate mounting is necessary to secure specimens from abrasion. The puncturation of the pronotum is considerably stronger and closer than that of *S. Eucalypti*, Boisid.

Higher mountains of Victoria and New South Wales.



## TRUE MELOLONTHIDES.

Lacordaire (whose classification I follow as closely as possible) divides the "Family" *Lamellicornes* into two "Legions," distinguished from each other by the arrangement of the abdominal stigmata—one of them exemplified plentifully in Australia by *Aphodius*, *Onthophagus*, and such like (usually known for the most part as "dung beetles"); the other of them exemplified even more plentifully in Australia by the beetles commonly called "chafers." This second "Legion" is divided by Lacordaire into four "Tribes," the first of which (*Melolonthides*) has formed the subject of the Revision that I have placed before the Royal Society of South Australia during recent years, beginning with 1905, and am still continuing. Lacordaire divided the "Tribe" into nine "subtribes," five of which are known to occur in Australia. My Revision of the third of these subtribes, "Sericoïdes," is concluded in the preceding pages of this paper, and I now pass on to the fourth of them, which Lacordaire calls "True Melolonthides." These he divides into three "groups," only the third of which (again called "True Melolonthides," the other two being regarded as less essentially *Melolonthid*) is known to occur in Australia. It contains the non-Australian genus *Melolontha* and other genera closely allied to it. The generic synonymy of the Australian members of this "tribe" is in much confusion, and must be dealt with before I proceed to deal with the species. Australian species of the tribe have been called by the following generic names: *Melolontha* (only by the earlier authors, at the time when the name was treated as including very diverse elements, some of which are not now recognized as members even of the tribe "true *Melolonthides*"), *Rhizotrogus*, *Rhopæa*, *Holophylla*, *Lepidiota*, *Lepidoderma*, and *Neolepidiota*.

*Rhizotrogus* is a genus of the second of Lacordaire's "groups" of the tribe. Burmeister regarded a species which he described under the name *tasmanicus* as belonging to *Rhizotrogus*, but he recognized it as so far aberrant in that genus that he formed a separate subgenus for it under the name *Antitrogus*. I have before me a species which is almost certainly that described by Burmeister, and it is decidedly not a *Rhizotrogus*, but a member of the group "true *Melolonthides*." *Antitrogus*, therefore, must be transferred to the tribe "true *Melolonthides*," while *Rhizotrogus* must drop out of the Catalogue of Australian *Coleoptera*. The names *Rhopæa* and *Holophylla* were proposed by Erichson (Ins. Deutschl., vol. iii., 1848) for Australian insects, which, however, their author did not name or describe as species. The former was placed by its author

among the true *Melolonthides*, the latter in a group which was separated by him under the name *Tanyproctini*. Comparing the very brief diagnoses of the genera one finds that they are distinguished from each other by the number of joints (six and seven) in the antennal flabellum and by the presence in *Holophylla* (but not in *Rhopœa*) of complete ventral sutures. The former of these characters is of no value at all; its acceptance would involve breaking up *Rhopœa* into five genera, in which the species most closely allied would be generically separated. Burmeister in 1855 stated that *Holophylla* has not complete ventral sutures—a statement that no doubt is correct in respect of the insect which he (Burmeister) regarded as *Holophylla* and named *H. furfuracea*—and that it is one of the true *Melolonthides*. But he does not appear to have had good authority for his identification. His remarks are too long to be quoted at full length here, but they imply his not having before him the actual specimen on which Erichson founded his genus; moreover, if he had had that specimen before him it seems most unlikely that he would not have described it and given it a specific name as being Erichson's type. At the time Burmeister wrote there was no Australian species known (apart from the undescribed species called *Holophylla*) of *Melolonthides* having transverse front coxæ and complete ventral sutures, and therefore a mistake on Erichson's part appeared the less unlikely, but since that time a genus has been described by Olliff (*Othnonius*) on a single species (*O. Batesi*) of which I have examples before me, and which undoubtedly falls (in Erichson's classification) in the *Tanyproctini* where he placed *Holophylla*—it having transverse front coxæ and complete ventral sutures, and might very well be the species that Erichson called *Holophylla* were it not for the generically valueless difference that its antennal flabellum has only six joints. It seems so unlikely that an author of Erichson's ability and reputation would definitely place a *Melolonthid* among those having complete ventral sutures (a very easily observed character), when that was not the case with it, as to suggest the probability of Burmeister's having been incorrect in his conjecture that the species he described as *Holophylla* is congeneric with Erichson's *Holophylla*, and the probability of the insect for which Erichson founded that genus being generically identical with, or very near to, that for which Olliff at a later date proposed the name *Othnonius*. To this must be added a very serious discrepancy between Erichson's and Burmeister's descriptions of the claws of *Holophylla*. Erichson says of them that they have "a single tooth at the base," distinguishing them from those of genera

whose claws have two teeth. Burmeister says of *Holophylla* that its claws are "*fein mit kleinem spitzen Zahn vor der Mitte und zahnartig vortretender Basis.*" Is it to be supposed that Erichson wrongly observed both the claws and the ventral sutures? The conclusion seems inevitable that Burmeister's *Holophylla* is a genus of the "Groupe" "true *Melolonthides*" and is closely allied to *Rhopæa*, while Erichson's *Holophylla* belongs to the "Groupe" *Macrophyllides* (treated by Erichson as part of his "Tanyproctini") and is allied to, and possibly identical with, Olliff's genus *Othnonius*. As Burmeister's is the later use of the name, I propose the new name *Pseudholophylla* for his *Holophylla*.

I am sorry that I was myself in error in a former paper in accepting Burmeister's conclusions regarding *Holophylla*, for I described as doubtfully of that genus a species ("*australis*," Trans. Roy. Soc., S.A., 1887, p. 211) which I then regarded as probably congeneric with Burmeister's *H. furfuracea*. At the same time I drew attention to the extreme closeness of *Rhopæa* and Burmeister's *Holophylla*. As a result of studying Brenske's memoir (discussed later on in this paper) I have, however, subsequently satisfied myself that my *H. australis* is not truly congeneric with *H. furfuracea*, Burm., but must be referred to *Rhopæa*, to which *Pseudholophylla* (as I now call Burmeister's genus) is certainly extraordinarily close. The difference in the palpi which I referred to (*l.c.*) as separating my *R. (Holophylla) australis* from *Rhopæa* ceases to appear generic when a considerable number of species of *Rhopæa* are compared with each other.

Turning now to Burmeister's lengthy diagnosis of his genus *Holophylla*, its author does not point out its differences from *Rhopæa*, omitting it from his tabulation of generic characters, and in comparing the diagnosis, character by character, with that furnished by him of *Rhopæa* I should be disposed to think that the two might well be founded on different species of *Rhopæa* were it not for the one statement that the apical spurs of the posterior tibiæ in *Holophylla* are "somewhat blunt and at the apex leather-like." This last phrase is not very clear, but I take it to refer to the somewhat transparent ("parchment-like" I should prefer to call it) appearance of the apical part of the spurs of the hind tibiæ in those genera of the true *Melolonthides* which have the spurs blunt and dilated. The importance of this character will be found discussed later on in this paper; it will suffice here to say that it appears to be in itself a valid generic distinction between *Pseudholophylla* and *Rhopæa*. I have recently acquired a *Melolonthid* species occurring in

Queensland, which appears to be certainly congeneric and very probably conspecific, with that which Burmeister described as *H. furfuracea*. It agrees perfectly with the generic characters assigned (especially in respect of the large strongly convex eyes) with the qualification that the apex of the 3rd antennal joint can scarcely be called "strongly" produced in a point (certainly not a valid generic difference, however), and that I have not dissected and examined the inner mouth organs. Burmeister's specific description is undesirably brief, but my specimen agrees with it such as it is except in respect of the statement that the front tibiæ are without spurs. In my specimen the spurs in question are extremely short (much more so than in most species of *Rhopæa*), but they are not absolutely wanting. The spurs of the hind tibiæ furnish, I think, the decisive difference from *Rhopæa*, but it may be noted that the tooth of the claws is much further from the base than in *Rhopæa* (as is indicated in Burmeister's diagnoses of those genera).

The subdivision of Lacordaire's "Groupe" "true *Melolonthides*" is most perplexing, owing to the difficulty of finding well-marked characters that are, on the one hand, constant in aggregates of species evidently closely related *inter se*, and, on the other hand, constantly wanting in other such aggregates. In Berliner Entomolog. Zeitschrift., 1892, Herr Brenske discussed the classification of Lacordaire's "subtribe" "True *Melolonthides*" without limiting his remarks to the genera of any particular country. The portion of his memoir which refers to the "Groupe" "True *Melolonthides*" is, of course, the only portion that concerns genera known to be Australian. It is difficult to ascertain exactly how he would treat some of our genera because he referred only incidentally to the characters of some of them, the definite objective of his memoir being the discussion of an aggregate in which he mentioned only one of our Australian genera. It seems fairly clear, however, that his classification would not fit our Australian genera. All of them apparently would have to be divided between two aggregates, which he calls *Polyphyllides* and *Leucopholides*, distinguished from each other by the length of the third antennal joint. The typical species of *Rhopæa* (*R. Verreauxi*, Blanch.) falls into the former of these aggregates on account of the elongation of its third antennal joint, but the length of the third joint varies extremely among species which certainly ought not to be separated generically (and still less, placed in different *groups* of genera); in *R. morbillosa*, Blackb., for example, the 3rd joint being shorter in proportion to the 4th than it is in some species that obviously pertain to *Lepidiota*, which

Brenske places in the other aggregate. It, therefore, appears to me impossible to divide the Australian true *Melolonthides* into groups distinguished by the length of the 3rd antennal joint without arriving at a result that would be absolutely ludicrous.

Among the characters which Brenske attributes to his aggregate *Leucopholides* there is one which, although he does not definitely state that it distinguishes those species from the *Polyphyllides*, nevertheless does appear to be of considerable value in separating the Australian genera of true *Melolonthides* into two aggregates. That character lies in the apical spurs of the hind tibiæ, which in Brenske's group *Leucopholides* are (or at any rate one of them is) greatly dilated in the females as compared with those of the other sex. Brenske does not characterize the spurs in the *Polyphyllides* having, when he reaches that stage in his paper where the spurs come in, already dismissed that aggregate as having the 3rd antennal joint elongate, and mentions only the *Rhizotrogides* (an aggregate not known to be Australian) as having the spurs alike in the two sexes. But, with some little hesitation, I think that character may serve as important for classifying the Australian genera of Lacordaire's "Groupe" "true *Melolonthides*."

Before explaining my use of the qualification "with some hesitation" it is necessary to refer to another character not mentioned by Brenske in the paper I am discussing, but which my studies of the Australian *Melolonthides* have led me to consider highly important from the generic point of view, though my knowledge of *Melolonthides* of other countries than Australia is not sufficient to qualify me for estimating its value in respect of other than Australian genera. The character that I refer to is the form and sculpture of the declivous front face of the clypeus. In the species of *Rhopæa* (i. e., of those species which one cannot doubt must be associated more or less closely with *R. Verreauxi*, Blanch.) the declivous front face of the clypeus is perpendicular or almost so, very high on the vertical line (the distance from base to summit being about equal to the length of the apical joint of a maxillary palpus), somewhat strongly and narrowly emarginate in the middle of its lower margin to receive the labrum, and having its whole surface (except a more or less narrow band along the summit) strongly and equally rugulose and set with long soft hairs. In *Lepidiota* and *Lepidoderma* the declivous front face of the clypeus is much less high (the distance from base to summit being much less than the length of the apical joint of a maxillary palpus), widely and feebly emarginate on its lower margin, and having

its surface (never as in *Rhopæa Verreauxi* but) rugulose and pilose only on the lateral parts (or with such sculpture extending across the middle only as a row of setigerous punctures).

Now in female *Rhopæa* (at any rate in the five species of which I have seen a female) the spurs of the hind tibiæ are of the same shape as in the male and are not (or scarcely) more dilated, the external sexual characters being in the antennæ and the hind tarsi, so that if the three genera I have already named were all that had to be reckoned with it would not be of practical importance to decide whether the clypeal or tibial generic structure should be regarded as the primary character for classification. But there are species which cannot be referred to any of those genera. There is *Antitrogus*, with the clypeus of a *Rhopæa* and spurs of hind tibiæ distinctly tending towards the *Lepidiota* type.

Next there is the insect which I described as *Rhopæa callabonensis*, but which on account of the structure of its labrum I do not now think can be included in *Rhopæa* or any other genus known to be Australian; it has the clypeus and antennæ of a *Rhopæa* and (although it is a male) the tibial spurs of a female *Lepidiota*. *Pseudholophylla* has head and antennæ exaggeratedly of the *Rhopæa* type, but again (though a male) tibial spurs that would befit a female *Lepidiota*. Another species before me has clypeus and tibial spurs like a *Lepidiota*, but antennæ of a *Rhopæa* (male with elongate 3rd joint and flabellum of 6 long joints). *Neolepidiota* in respect of clypeus, antennæ, and tibial spurs agrees (if it is a male) with *Lepidiota*.

The conclusion I have reached on full consideration of the data supplied above, and giving much weight to the practical inconvenience of a classification which is inoperative in species whose females are not known, is that for the Australian species of Lacordaire's "Groupe" "true *Melolonthides*" the best character for dividing them primarily into two aggregates is to be found in the structure of the clypeus. This classification brings together into one aggregate *Rhopæa*, *Pseudholophylla*, *Antitrogus*, and a genus characterized in the following pages as *Pararhopæa*, and places together in a second aggregate *Lepidoderma*, *Lepidiota*, *Neolepidiota*, and a genus characterized in the following pages as *Paralepidiota*. The former of these primary aggregates is no doubt capable of satisfactory subdivision founded on the spurs of the hind tibiæ, but in the absence of definite certainty as to the female of *Antitrogus* it would be unwise to make use of that character, and I therefore in both aggre-

gates found their subdivision on the presence (a) of three joints only, (b) of more than three joints, in the antennal flabellum, which seems to be a more important character in this group than it is in the *Sericoides*.

It may be noted here that *Rhopaea* is extremely close to the Fabrician genus *Melolontha*. Lacordaire distinguishes it from the latter by there being an additional lamina in its antennal flabellum (which is certainly not a valid generic character), and adds that it is of more cylindric and parallel form, that its pygidium is slightly emarginate in the female (in *Melolontha* he calls the hind margin of the pygidium "of variable form"), and that it has no trace of a mesosternal process (in tabulating *Melolontha* he places it in the aggregate "no mesosternal process," but in the diagnosis of the genus says that its mesosternum is "slightly prominent"). I have before me *M. vulgaris*, Fab., which is, I believe, the typical species of the genus, and fail to discover in it any mesosternal process on which to found a generic distinction. Its extraordinarily produced pygidium is totally different from the pygidium of any known *Rhopaea*, but Lacordaire states that that elongation is wanting in some other European members of the genus. In fact, the only character that I can find (likely to be generic) constant in *Rhopaea* distinguishing it from *M. vulgaris* (now before me) and from the constant characters of *Melolontha* as stated by Lacordaire is in the claws, their tooth being in *Rhopaea* much larger and placed at a considerably greater distance from the base of the claw than in *Melolontha*.

I may now pass on to show in tabular form distinctive characters for those aggregates of the "Groupe" "true *Melolonthides*" which in my opinion should be regarded as valid genera, so far as concerns the Australian Fauna. I am doubtful, however, whether the species that I attribute to *Lepidiota* ought not to be divided into more than one genus; but since *Lepidiota* is of very wide distribution, and Australia does not appear to be its headquarters, a wider knowledge than I possess of the species occurring outside Australia should be at the disposal of an author to enable him to deal satisfactorily with that question.

- A. Front face of clypeus rugulose, and set all across with long soft hairs; distance from its base to its summit about equal to the length of the apical joint of a maxillary palpus.
- B. Antennal flabellum consisting of more than 3 joints.
- C. Labrum vertical or nearly so.

- D. Apical spurs of hind tibiæ in both sexes elongate and pointed, not dilated to middle ... .. Rhopæa.
- DD. Apical spurs of hind tibiæ (in ♂ and no doubt still more so in ♀) comparatively short and blunt, dilated from base to middle ... .. Pseudholophylla.
- CC. Labrum strongly directed forward, almost horizontal ... .. Pararhopæa.
- BB. Antennal flabellum consisting of only 3 joints ... .. Antitrogus.
- AA. Front face of clypeus in middle part not "rugulose and evenly set with long hairs"; distance from its base to its summit much less than in A.
- B. Antennal flabellum consisting of more than 3 joints.
- C. Laminae of the antennal flabellum as long as the preceding joints together ... .. Paralepidiota.
- CC. Laminae of the antennal flabellum much shorter ... .. Lepidoderma.
- BB. Antennal flabellum consisting of only 3 joints.
- C. Front tarsi very long ... .. Neolepidiota.
- CC. Front tarsi much shorter ... .. Lepidiota.

## RHOPÆA.

So little has been reported of the Fauna of some parts of Australia that it is unsafe to generalize very positively regarding the geographical distribution of genera, but subject to that qualification it may be said that *Rhopæa* is chiefly a Southern Australia genus. I have no evidence of its occurrence further north than the Brisbane district except the possession of a single specimen labelled "N. Queensland." Neither have I seen any *Rhopæa* from any locality west of Yorke Peninsula. The genus seems to have its headquarters about the latitude of Sydney. Female *Rhopæa* are very much rarer in collections than males. Of the species of which I have seen the largest number of specimens (*R. magnicornis*) I have not seen a female, and the case is similar in respect of more than half of the other species. The antennal flabellum and the tarsi of the males are longer (generally very much longer) than those of the other sex. I have in my collection a female *Rhopæa* from New South Wales (not, I think, conspecific with any male known to me) with the extraordinary character of its antennæ consisting of only 9 joints. That number seems so improbable that I have examined the specimen over and over again thinking that I must have made some mistake, but always with the same conclusion—only 9 joints. Joint 3 is very elongate, 5



shortly spinose on its inner side, 6 a very short lamella, 7-9 fairly elongate lamellæ, each a little longer than joints 3-5 together. I can regard this structure only as a freak, either in the individual or the species, unfitting it for description without examination of more specimens. *Rhopæa castaneipennis*, Macl. (from North-West Australia) is incorrectly placed in this genus, and I think it will require a new generic name. There are two specimens (one of which is labelled "type") which I have inspected in the Macleay Museum; but as I had not available for comparison examples of the two new genera near *Rhopæa* that are diagnosed in the following pages I do not venture to deal with it at present. The structure of its labrum associates it with *Pararhopæa*, but the spurs of its hind tibiæ are of the *Rhopæa* type and the sculpture of the front face of its clypeus is notably less rugulose (with much shorter and coarser pilosity) than in *Rhopæa* and *Pararhopæa*, but nevertheless is distinctly of the *Rhopæa* rather than the *Lepidiota* type. It is clearly a very isolated form in the *Melolonthides*, and its habitat is very remote from any from which known species near *Rhopæa* have been reported, but probably the future will bring to light other species from the same region congeneric with it.

The following table indicates characters by which the males of the known species of *Rhopæa* can be distinguished:—

- |  |                                     |
|--|-------------------------------------|
| A. Antennal flabellum consists of 8 laminae (7 of about equal length) ...                              | <i>magnicornis</i> , <i>Blackb.</i> |
| AA. Antennal flabellum consists of 7 laminae (at least 6 of them long and subequal).                   |                                     |
| B. Punctures of pronotum very close throughout; for the most part confluent.                           |                                     |
| C. Joint 3 of antennæ not longer than its width at the apex.   |                                     |
| D. Elytra, and dorsal surface of pronotum, having only close short pubescence.                         |                                     |
| E. Prothorax very strongly narrowed in front, and with sides very strongly rounded                     | <i>soror</i> , <i>Blackb.</i>       |
| EE. Prothorax not strongly narrowed in front, and with sides (viewed from above) lightly arched ... .. | <i>heterodactyla</i> , <i>Germ.</i> |
| DD. Elytra and whole surface of pronotum sparsely set with erect comparatively long hairs              | <i>hirtuosa</i> , <i>Blackb.</i>    |
| CC. Joint 3 of antennæ much more than twice as long as wide ...  | <i>assimilis</i> , <i>Blackb.</i>   |

- BB. Punctures of pronotum subconfluent on sides but distinctly spaced on disc, some intervals larger than the adjacent punctures.
- C. Width of prothorax considerably less than twice length.
- D. Disc of pronotum quite sparsely punctulate ... .. [Blackb. australis (*Holophylla*),
- DD. Disc of pronotum closely (though by no means confluent) punctulate ... .. pilosa, Blackb.
- CC. Width of prothorax fully twice the length of same ... .. laticollis, Blackb.
- AAA. Antennal flabellum consists of 6 laminae (1st of them usually very short).
- B. Punctures of pronotum confluent and very small ... .. Verreauxi, Blanch.
- BB. Punctures of pronotum very much larger and less close.
- C. Sides of prothorax distinctly angulate about the middle of their length ... .. dubitans, Blackb.
- CC. Sides of prothorax only rounded about the middle of their length.
- D. Joint 3 of antennae very short, scarcely longer than wide ... Mussoni, Blackb.
- DD. Joint 3 of antennae considerably longer than wide.
- E. Joint 3 of antennae abruptly rounded on inner side just before apex; body long and parallel ... .. consanguinea, Blackb.
- EE. Joint 3 of antennae cylindrical; body much wider and less parallel ... .. rugulosa, Blackb.
- AAAA. Antennal club consists of 5 laminae (only apical 3 of them full length).
- B. Front margin of clypeus widely upturned; pygidium very closely asperate without other punctures.
- C. Sides of prothorax evenly and not very strongly rounded ... .. incognita, Blackb.
- CC. Sides of prothorax abruptly, and very strongly, rotundate-dilate about middle ... .. morbillosa, Blackb.
- BB. Front margin of clypeus only very narrowly upturned; pygidium coriaceous and studded with much larger punctures ... .. planiceps, Blackb.
- Table of characters distinguishing the female *Rhopææ* known to me:—
- A. Puncturation of pronotum very close and fine (as in their males).
- B. Antennal flabellum with 6 long and subequal laminae ... .. soror, Blackb.

- BB. Antennal flabellum with only 5 long and subequal laminae ... .. Verreauxi, Blanch.
- AA. Punctures of pronotum much larger and less close (as in their males).
- B. Antennal flabellum with 5 subequal laminae, each equal to joints 1-5 of the antennae together ... .. Mussoni, Blackb.
- BB. Antennal flabellum with only 3 of its laminae subequal, each of them much shorter than in *Mussoni* ... .. rugulosa, Blackb.

*R. assimilis*, sp. nov., Mas. Elongata; subtiliter pubescens, capite prothoracis margine antico sternis pedibusque pilis elongatis vestitis; rufo-brunnea, capite pronoto scutello pygidioque confertissime subtilissime nonnihil aspere (clypeo fortiter transverso, antice sat alte reflexo, minus crebre minus subtiliter) punctulatis; elytris dupliciter (subtiliter fere ut pronotum, et puncturis majoribus numerosis leviter impressis) punctulatis; palporum maxillarium articulo apicali supra profunde concavo; antennis 10-articulatis, articulo 3<sup>o</sup> quam 1<sup>us</sup> 2<sup>us</sup> que conjuncti nonnihil longiori, flabello 7-articulato quam articuli ceteri conjuncti paullo longiori (illius articulo basali quam ceteri multo breviori); prothorace quam longiori ut 5 ad 3 latiori, antice sat fortiter angustato, lateribus crenulatis parum arcuatis, basi late leviter lobata angulis posticis obtusis; pygidio ad apicem anguste obsolete emarginato.

Fem. latet. Long., 11 i.; lat., 5 l. (vix.).

Easily distinguishable from its known congeners by its close fine puncturation (not much different from that of *R. Verreauxi*, Blanch., except in the puncturation of the pygidium being manifestly less close and fine) in combination with a 7-jointed antennal flabellum, the first joint of which is less than half as long as the second joint. It differs from all the other known species having very fine and close puncturation (except *Verreauxi*) by the elongate 3rd joint of its antennae, and from all of them except *heterodactyla*, Germ., by the much less strongly arched sides of its prothorax, which when viewed from above appear almost evenly narrowed from base to apex—though viewed from the side they are seen to be quite strongly—but notably less strongly than in others except *heterodactyla*—rounded. The 3rd joint of the antennae joins on to the flabellum much nearer to the hind extremity of the latter than in *heterodactyla*, *soror*, and *hirtuosa*.

New South Wales; sent to me by Mr. Sloane, as taken at Bulli.

*R. pilosa*, sp. nov., Mas. Minus elongata; subtiliter pubescens, capite pronoto elytrisque pilis erectis fulvis sat elongatis vestitis, sternis pedibusque longe fulvo-

pilosis; rufobrunnea; capite crebre sat fortiter (clypeo magis grosse, hoc sat transverso antice sat alte reflexo) punctulato; palporum maxillarium articulo apicali supra concavo; antennis 10-articulatis, articulo 3<sup>o</sup> triangulari (intus quam articuli 1<sup>us</sup> 2<sup>us</sup> que conjuncti vix breviori, extus multo breviori, margine apicali ad flabellum applicato quam margo anticus sat longiori, cum hoc angulum plus minusve spiniformem efficienti), flabello 7-articulato quam articuli ceteri conjuncti sat longiori (illius articulo basali quam ceteri parum breviori); prothorace quam longiori ut 18 ad 11 latiori, antice sat angustato, supra inæqualiter (puncturis nonnullis quam ceteræ multo majoribus) sat crebre sat fortiter punctulato, lateribus crenulatis fortiter rotundatis, basi bisinuata, angulis posticis obtusis; elytris longitudinaliter obtuse obsolete costulatis, dupliciter (subtiliter, et puncturis majoribus numerosis leviter impressis) punctulatis; pygidio confertissime subtilissime nonnihil aspere punctulato.

Fem. latet. Long.,  $9\frac{1}{2}$  l.; lat.,  $4\frac{1}{5}$  l.

Somewhat closely allied to *R. (Holophylla) australis*, Blackb., but much less nitid, the sides of the prothorax more strongly rounded, the puncturation of the pronotum (especially of its disc) much closer and stronger. From *R. assimilis*, Blackb., it differs by, *inter alia*, the triangular shape of its 3rd antennal joint, from *heterodactyla*, *soror*, and *hirtusoa* by the very much less close puncturation of its pronotum, and from the rest of its known congeners by the number of joints in the flabellum of its antennæ. The peculiar form of the 3rd joint of the antennæ, as described above—that joint, moreover, meeting the flabellum considerably in front of the hind margin of the latter—is a structure common to all the *Rhopæa* known to me (except *assimilis*), having the flabellum of 7 joints. The erect pilosity of the dorsal surface of this species also distinguishes it from *heterodactyla*, *soror*, and *assimilis*.

New South Wales; sent by Mr. Froggatt, as from Boro (his No. 17).

*R. latcollis*, sp. nov., Mas. Minus elongata; subtiliter pubescens, capite pronoto elytrisque pilis erectis fulvis sat elongatis vestitis, sternis pedibusque longe fulvopilosis; rufobrunnea; clypeo (hoc minus transverso, antice alte reflexo) sat grosse nec rugulose, fronte confertim subtiliter aspere, punctulatis; palporum maxillarium articulo apicali supra depresso, parte depresso coriacea; antennis 10-articulatis, ut præcedentis (*R.*

(*pilosæ*) formatis; prothorace quam longiori duplo latiori, antice parum angustato, supra crebre (in disco nullo modo confluentur) punctulato, lateribus crenulatis fortiter rotundatis, angulis posticis obtusis, basi in media parte manifeste lobata; elytris longitudinaliter obtuse sat perspicue costulatis, dupliciter (minus fortiter et puncturis majoribus numerosis sat fortiter impressis) punctulatis; pygidio puncturis minus crebre minus fortiter impresso.

Fem. latet. Long., 10 l.; lat., 5 l.

Differs from all the other species of *Rhopæa* known to me (except *pilosa*) by the characters cited above as distinguishing *R. pilosa* from them. It differs from all of them (including *pilosa*) by its prothorax fully twice as wide as long, and also by the sculpture of its elytra, the punctures of which are all strongly impressed—the smaller ones not nearly so small or closely placed as in other species (e.g., *pilosa*)—a sculpture which causes the elytra to be distinctly rugulose and somewhat more nitid than is usual in many *Rhopææ*. The coriaceous space on the dorsal surface of the apical joint of the maxillary palpi is not, as it is in many *Rhopæa* (e.g., the two described above), concave, but is merely depressed; I am, however, doubtful of the value of this character, as the depth of the concavity is certainly not quite invariable within the limits of a species.

New South Wales, Inverell; sent to me by Mr. Carter.

*R. dubitans*, sp. nov., Mas. Minus elongata; capite pronoto elytrisq[ue] pilis erectis fulvis sat elongatis sparsim vestitis, sternis pedibusq[ue] longe pilosis; rufo-brunnea; clypeo (hoc minus transverso peralte reflexo) sat crebre sat fortiter nec rugulose, fronte fere ut clypeus sed rugulose, punctulatis; palporum maxillarium articulo apicali supra concavo, parte concava coriacea; antennis 10-articulatis, articulo 3<sup>o</sup> quam latiori circiter duplo longiori, flabello 6-articulato quam articuli ceteri conjuncti parum longiori (illius articulo primo quam ceteri fere triplo breviori); prothorace quam longiori ut 18 ad 11 latiori, antice fortiter angustato, supra sparsius minus profunde (latera basinque versus crebrius profundius) punctulato, lateribus crenulatis fortiter (in media parte obtuse subangulatis) rotundatis, angulis posticis rectis, basi media late leviter lobata; elytris longitudinaliter obtuse sat obsolete costulatis, fortiter inæqualiter rugulose sat crebre punctulatis; pygidio crebre subtiliter subaspere punctulato.

Fem. latet. Long., 10 l.; lat., 4 $\frac{4}{5}$  l.

Somewhat close to *R. Mussoni*, Blackb., but easily distinguishable by the much longer joint 3 of its antennæ, the manifestly sparser and feebler puncturation of its pronotum, and the evident angularity of the latero-median dilatation of its prothorax.

New South Wales (exact locality not known).

*R. rugulosa*, sp. nov. Sat lata; supra subglabra, sternis pedibusque longe fulvo-pilosis; rufo-brunnea; capite pronotoque sat fortiter vix crebre vix rugulose punctulatis; clypeo minus transverso peralte reflexo; palporum maxillarium articulo apicali supra concavo, parte concava coriacea; antennis 10-articulatis; prothorace quam longiori ut 5 ad 3 latiori, antice sat angustato, lateribus crenulatis sat fortiter nec angulatim rotundatis, angulis posticis rectis, basi bisinuata; elytris longitudinaliter obtuse sat obsolete costulatis, rugulose subgrosse vix crebre punctulatis; pygidio coriaceo, leviter minus confertim subtilius punctulato.

Maris antennarum articulo 3<sup>o</sup> quam latiori multo longiori sat cylindrico, flabello quam articuli ceteri conjuncti sat longiori 6-articulato (illius articulo primo quam ceteri tribus partibus breviori).

Feminæ antennarum flabello quam articuli ceteri conjuncti multo breviori, 6-articulato (illius articulis primo perbrevis, 2<sup>o</sup> 3<sup>o</sup> 4<sup>o</sup> gradatim longioribus, 5<sup>o</sup> 6<sup>o</sup> que 4<sup>o</sup> æqualibus); tarsis quam maris multo brevioribus. Long., 11 l.; lat., 5½ l.

Nearest to *R. dubitans*, but at once distinguishable from it by the evidently closer puncturation of its pronotum, the punctures of its pygidium much less close and much larger, and the sides of its prothorax evenly (without any angularity) rounded in the middle. There is no pilosity on the dorsal surface of either of the specimens before me, and this does not appear to be the result of abrasion.

Queensland, Brisbane; given to me by Mr. French.

*R. consanguinea*, sp. nov., Mas. Præcedenti (*R. rugulosæ*) affinis; multo magis angusta; antennarum articulo 3<sup>o</sup> breviori, quam latiori haud multo longiori, ad apicem quam ad basin multo latiori, ante apicem intus manifeste anguliformi; antennarum flabelli articulo 1<sup>o</sup> paullo longiori; prothorace antice magis angustata, ad basin manifeste lobato; elytrorum costulis multo minus obsolete.

Fem. latet. Long., 10½ l.; lat., 5 l. (vix.).

Subject to the qualifications mentioned above the description of *R. rugulosa* applies to this species, and need

not be repeated at full length; the puncturation of the two presents no noteworthy distinction. The notably narrower more parallel and more elongate form is, I think, a reliable character in *Rhopæa*; the difference in the shape of the prothorax is very noticeable when the two species are side by side, and the very different structure of the 3rd antennal joint prevents any difficulty in distinguishing either from the other. In all probability these characters are distinctive of the females also. The greater development of the elytral costæ in the unique type of *R. consanguinea* is perhaps not so reliable as the other characters cited.

North Queensland.

*R. incognita*, sp. nov. Mas. Modice elongata; rufotestacea; fronte elytrisque pilis erectis fulvis sparsim vestitis, sternis pedibusque longe fulvo-pilosis; clypeo crebre rugulose subtilius punctulato, antice alte reflexo; fronte subgrosse rugulosa; exempli typici palpis maxillaribus carentibus; antennis 10-articulatis, articulis 3<sup>o</sup> sat brevi quam latiori parum longiori 5<sup>o</sup> brevi intus breviter spiniformi, flabello 5-articulato (articulis 1<sup>o</sup> quam 2<sup>us</sup> dimidio, 2<sup>o</sup> quam 3<sup>us</sup> fere dimidio, brevioribus) quam articuli ceteri conjuncti sat longiori; prothorace quam longiori ut 10 ad 6½ latiori, antice fortiter angustato, sat crebre sat fortiter punctulato, lateribus crenulatis minus fortiter rotundatis, angulis posticis acute rectis, basi sat fortiter lobata; elytris longitudinaliter obtuse minus obsolete costulatis, rugulose subgrosse vix crebre punctulatis; pygidio subtilissime creberrime punctulato.

Fem. latet. Long., 11½ l.; lat., 5½ l.

This species is near *R. morbillosa*, Blackb., but of narrower form, its antennæ similar, its clypeus a little less strongly elevated in front, its prothorax more strongly narrowed in front and having sides much less dilatate in the middle and base more lobate, its pygidium more finely and more closely punctulate. From *R. planiceps* it differs by, *inter alia*, its clypeus very much more strongly reflexed, its prothorax more strongly narrowed in front and more strongly lobed at base and its pygidium much more closely and finely punctulate. From both the above it differs by the much better defined *costula* of its elytra.

Australia (locality uncertain, but I believe I took it in the Victorian Alpine Region).

*R. planiceps*, sp. nov., Mas. Minus elongata; supra subglabra, sternis pedibusque longe fulvo-pilosis; rufobrunnea; capite pronotoque sat fortiter vix crebre punctulatis; clypeo minus lato, antice parum reflexo;

palporum maxillarium articulo apicali supra concavo, parte concava coriacea; antennis 10-articulatis, articulis 3<sup>o</sup> sat cylindrico quam latiori sat multo longiori 5<sup>o</sup> brevi intus breviter spiniformi, flabello 5-articulato (articulis 1<sup>o</sup> quam 3<sup>us</sup> dimidio breviori, 2<sup>o</sup> quam 1<sup>us</sup> paullo longiori) articulis ceteris conjunctis longitudine sat æquali; prothorace quam longiori ut 18 ad 11 latiori, antice sat angustato, lateribus crenulatis minus fortiter rotundatis, angulis posticis rectis, basi manifeste lobata; elytris longitudinaliter obtuse sat obsolete costulatis, rugulose subgrosse vix crebre punctulatis; pygidio coriaceo, leviter minus crebre subtilius punctulato

Fem. latet. Long., 10 l.; lat., 4 $\frac{1}{2}$  l.

This species resembles *R. rugulosa*, Blackb., in respect of puncturation, but is easily distinguishable by, *inter alia*, the front of its clypeus only very lightly upturned, its antennal flabellum with only 5 joints, and the sides of its prothorax much less strongly rounded. The number of joints in its antennal flabellum distinguishes it from all the other known species of the genus except *R. morbillosa*, Blackb., and *incognita*, Blackb.

South Australia; type in South Australian Museum.

PSEUDHOLOPHYLLA (gen. nov. *Melolonthidarum verarum*, Lac.).

This is a new name for *Holophylla*, Burm. (*nec* Er.). Only one species (*furfuracea*, Burm.) has been described. The insect which I believe to be that species occurs in Queensland.

PARALEPIDIOTA (gen. nov. *Melolonthidarum verarum*, Lac.).

*A. Lepidiota* differt antennarum flabello laminas plures quam tres præbenti. *A. Lepidodermate* differt mas tibiæ posticarum spina interna ad mediam partem quam ad basin multo latiori, et antennarum flabello quam articuli præcedentes conjuncti longiori.

I place this genus near *Lepidiota* rather than *Rhopæa*, on account of the structure of its clypeus, the erect front face of which is not strongly elevated above the labrum (much less than the length of the apical joint of the maxillary palpi) and is very nitid, and bears very large punctures, which emit short, coarse, white hairs and scales. It differs from all the other known Australian genera of the *Lepidiota* group by its antennæ, which are like those of a *Rhopæa* (6 long laminæ in



the male flabellum of the species before me). It is also notable in respect of the inner spur of its hind tibiæ, which is dilated from its base in the male to beyond the middle of its length (and then suddenly narrowed almost to a point) and in the female quite to its rounded apex.

I must defer the description of this insect as a species until my next paper, as a memoir by Herr Brenske describing new species of *Lepidoderma* (among which it is just possible that this species is included) will not reach me until too late to be studied before the issue of my present paper, but it seemed desirable to place the genus in the preceding tabulation.

PARARHOPÆA (gen. nov. *Melolonthidarum verarum*,  
Lac.).

*Rhopæa* affinis. Mentum transversum; palpi labiales minus breves, articulo apicali oblongo ad apicem acuminato; palpi maxillares sat elongati, articulo apicali supra concavo; labrum sat magnum fere horizontale, antice profunde emarginatum; clypeus modicus, declivitate antica alta verticali æqualiter rugulosa et pilis sat elongatis obsita; antennæ 10-articulatæ, flabello maris valde elongato (hujus laminæ quam tres sunt plures); pedes sat elongati, tibiis anticis intus ad apicem spina brevi armatis extus dentatis, tibiis posticis maris ad apicem calcaribus 2 armatis (horum altero brevi spiniformi altero elongato laminiformi a basi ad mediam partem leviter dilatato), unguiculis pone medium dente valido armatis ad basin vix dentiformibus.

Femina latet.

Ad hoc genus tribuenda est *P. (Rhopæa) callabonensis*, Blackb.

This species has been sufficiently described in Trans. Roy. Soc., S.A., 1894, p. 205. It should perhaps be added that its front tibiæ have three external teeth. It differs from *Rhopæa* principally by the form of its labrum, by the more elongate and slender apical joint of its labial palpi, and by the spurs of its hind tibiæ.

ANTITROGUS.

All the specimens that I have seen of this genus are from the south-eastern quarter of Australia and from Tasmania. Examples, especially of the female, are not common in collections, but this is due probably (at any rate in respect of the males) to accidental circumstances, or perhaps to periodicity, as males of one of the species known to me were

found plentifully by Mr. Griffith flying in the evening at Henley Beach, near Adelaide. The *Antitrogi* are comparatively large *Melolonthides*, not closely resembling in facies any others known to me, but perhaps most like the less-elongate species of *Rhopæa*, which indeed are, in my opinion, their closest allies. Brenske regarded them as a subgenus of *Lepidiota*, but in this I cannot follow him. I cannot find any statement of his reasons for this assignment but conjecture that it was founded on the number of joints in the antennal flabellum (to which I am convinced he attributed too much importance) and on the structure of the spurs of the hind tibiæ in the female. This latter character is no doubt of importance, but I doubt whether Brenske can have seen a female, which sex was not known to Burmeister, the author of the genus and of its only as yet described species; and as Brenske refers only to that species, and refers only to Burmeister's treatment of that species (which was certainly founded on a male), it seems quite possible that he had seen only the original type. As a fact the structure of the spurs of the hind tibiæ in the female is much more of the *Rhopæa* type than of the *Lepidiota* type. The inner spur of that sex is a little more definitely enlarged as compared with that of the male than in *Rhopæa*, and is blunted at the apex (probably indicating that the place of *Antitrogus* is between *Rhopæa* and *Lepidiota*), but it has no tendency towards the "spoon" shape which Brenske considers (so far as my knowledge of the genus extends, correctly) characteristic of *Lepidiota*, and, moreover, is not dilated from the base upward. The sculpture and vestiture of the front declivous face of the clypeus is absolutely of the *Rhopæa* type, a character which—as I have already indicated—I regard as of first importance. When to these considerations are added the fact that *Antitrogus* in facies considerably resembles *Rhopæa* and is particularly unlike a typical *Lepidiota*, and the fact that its vestiture (at any rate that of all the species I have seen) is entirely pilose (not squamiferous), it really seems to me a very clear case that Brenske misplaced it.

Burmeister made *Antitrogus* a subgenus of *Rhizotrogus*, and, of course, Brenske is right in disputing that assignment. It is no doubt very much nearer *Lepidiota* than *Rhizotrogus*.

The three species known to me of the genus are extremely close, *inter se*, and seem to be very variable in colour and in degree of pruinosity. I find, however, very little variation among the individuals of the only large batch of specimens that I have seen as taken in company, and therefore I think that the differences of colour and iridescence in the single individuals (or in some cases two) that I have seen

from other localities and in which I cannot find good structural specific differences, may possibly be found when more specimens of both sexes can be examined to be accompanied by distinctions of specific value.

The sexual differences in *Antitrogus* are not very conspicuous except in respect of the laminae of the antennal flabellum, which in the male are at least as long as—in the female much shorter than—the preceding antennal joints together, and in respect of the hind tarsi, which are more or less shortened in the female. The comparatively slight difference in the spurs of the hind tibiae has been referred to already.

Of the three species before me, either of two may possibly be Burmeister's species, as he mentions no character not found in them both, and gives no indication of locality beyond "Neu-Holland." One of the two referred to is from Victoria and Albury (New South Wales), the other from South Australia. The fact that European collections in early days received comparatively few species from the latter locality points to the probability of the *Antitrogus* from Victoria, etc., being *tasmanicus* Burm., and the conjecture is slightly strengthened by Burmeister's remark that the 3rd antennal joint is "nicht verlängerte"—a phrase that might fairly be applied to either of the two species I am discussing, but that indicates the Victorian one even more strongly than the other, in which the 3rd antennal joint, though short, is quite distinctly longer than the 4th joint. I presume the name "*tasmanicus*" to have been given in honour of the voyager Tasman. The species is assigned to Tasmania in Masters' Catalogue, but, as noted above, is not so assigned by the author. It may be noted here that an *Antitrogus* is found in Tasmania, but, even disregarding the author's statement of locality, is not likely to be his species, since it has black antennae, and the antennae of *tasmanicus* are especially mentioned as "red-brown."

The following tabulation indicates characters by which the *Antitrogi* known to me can be distinguished:—

- |     |  |     |     |     |     |     |                      |
|-----|--|-----|-----|-----|-----|-----|----------------------|
| A.  | Joint 3 of antennae distinctly longer than joint 4 | ... | ... | ... | ... | ... | Burmeisteri, Blackb. |
| AA. | Joint 3 of antennae not longer than joint 4.       |     |     |     |     |     |                      |
| B.  | Antennae red                                       | ... | ... | ... | ... | ... | tasmanicus, Burm.    |
| BB. | Antennae black                                     | ... | ... | ... | ... | ... | nigricornis, Blackb. |
- A. *nigricornis*, sp. nov., Mas. Subnitidus; nigropiceus, antennis nigris, pedibus et segmentis apicalibus 2 non-nihil rufescentibus; supra sat iridescens; prothoracis basi, coxis, sternisque dense fulvo-pilosis; elytris pilis

brevibus cinereis parum perspicuis sparsim vestitis; clypeo sat crebre subgrosse, fronte prothoraceque minus crebre magis subtiliter, punctulatis; antennis 10-articulatis, articulis 1<sup>o</sup> piriformi, 2<sup>o</sup> brevi subgloboso, 3<sup>o</sup> quam 2<sup>us</sup> parum longiori, 4<sup>o</sup> 3<sup>o</sup> sat æquali, 5<sup>o</sup> quam 4<sup>us</sup> paullo brevieri intus dentiformi, 6<sup>o</sup> 7<sup>o</sup> que perbrevibus (intus spiniformibus), 8<sup>o</sup>-10<sup>o</sup> flabellum (hoc quam articuli ceteri conjuncti longiori) formantibus; prothorace quam longiori ut 5 ad 3 latiori, antice fortiter angustato, margine apicali emarginato, lateribus pone medium fortiter rotundatis (vel fere subangulatis), basi (partibus lateralibus exceptis) haud marginata; scutello transverso, fere ut prothorax punctulato; elytris sat crebre quam prothorax multo magis grosse punctulatis, costulis obtusis subobsoletis 3 instructis; pygidio crebrius subtilius (linea media sparsim excepta) punctulato; segmentis ventralibus fere ut pygidium punctulatis; pedibus longe ciliatis, sat crebre rugulose nec grosse punctulatis; tibiis anticis extus tridentatis; tarsis anticis quam tibiæ paullo longioribus, intermediis tibiis sat æqualibus, posticis quam tibiæ paullo brevioribus. Long., 11 l.; lat., 5 $\frac{3}{8}$  l.

This species is certainly somewhat close to that which I take to be *A. tasmanicus*, Burm., but differs strongly from Burmeister's description by its black antennæ and palpi and its piceous legs, and (from the specimens that I believe to be *tasmanicus*) also by its notably narrower and more parallel form. I have not seen the female. In one of the specimens before me the prothorax is a little rufescent on its sides.

#### Tasmania.

*A. Burmeisteri*, sp. nov., Mas. Subnitidus; fusco-brunneus, palpis pedibusque dilutioribus, antennis testaceis, abdomine antice piceo postice rufo; vix iridescens; prothoracis basi, coxis sternisque, dense fulvopilosis; elytris pilis brevibus pallidis sparsim vestitis; capite sat crebre subgrosse, prothorace minus crebre vix magis subtiliter, punctulatis; antennis 10-articulatis, articulis 1<sup>o</sup> piriformi, 2<sup>o</sup> brevi transversim globoso, 3<sup>o</sup> quam 2<sup>us</sup> sat longiori, 4<sup>o</sup> quam 3<sup>us</sup> sat breviori, 5<sup>o</sup> quam 4<sup>us</sup> parum breviori intus dentiformi, 6<sup>o</sup> 7<sup>o</sup> que brevibus intus spiniformibus, 8<sup>o</sup>-10<sup>o</sup> flabellum (hoc quam articuli ceteri conjuncti longiori) formantibus; prothorace quam longiori. fere ut 5 ad 3 latiori, antice fortiter angustato, margine apicali emarginato, lateribus arcuatis, basi (parte mediana summa excepta) manifeste marginata; scutello transverso, fere ut prothorax punctulato; elytris sat

crebre quam prothorax multo magis grosse punctulatis, costulis obtusis subobsoletis 3 instructis; pygidio puncturis minutis confertis et aliis majoribus sat crebris impresso; segmentis ventralibus sat crebre punctulatis; pedibus longe ciliatis, sat crebre rugulose sat grosse punctulatis; tibiis anticis extus tridentatis; tarris anticis quam tibiæ sat longioribus, posterioribus 4 tibiis sat æqualibus. Long., 11 l.; lat., 5½ l.

Easily distinguishable from *A. nigricornis* and from the species that I regard as *tasmanicus* by the 3rd joint of its antennæ very distinctly longer than the 4th joint (the 4th joint about equals two-thirds of the 3rd). The typical specimen of this species (I have a second example exactly like it, but badly damaged, and evidently from style of mounting, etc., a companion specimen) also differs from them by its dark ferruginous—not at all piceous and scarcely pruinose—body and its clear ferruginous legs and by its evidently longer tarsi. Both examples are males. The *Antitrogus* which I have mentioned above as taken in numbers by Mr. Griffith agrees with *Burmeisteri*, so far as I can discover, in all respects except colouring, but its colour is that of the species that I believe to be *tasmanicus*. The type of *Burmeisteri* and its companion specimen are from South Australia, but I have lost record of exact locality. I am almost sure, however, that the locality is not near Adelaide. On the whole there seems to me to be a doubt whether the examination of a series of fresh specimens of both sexes coloured like the type may not eventually reveal grounds for regarding the Henley Beach examples as specifically distinct.

South Australia.

#### ELATERIDÆ.

##### CREPIDOMENINI.

##### PARABLAX.

Dr. Schwartz (D.E.Z., 1906, p. 368) formed a new genus of the above name for certain species which had previously been attributed to *Metablax*, among them his *M. trisulcatus*. Two species (*bicolor*, Blackb., and *quinesulcatus*, Blackb.) which I placed in the allied genus *Parasaphes* must also be transferred to this new genus *Parablax*.

#### ELATERIDÆ.

##### PHYSODACTYLINI.

The *Physodactylini* have been variously treated by authors. Lacordaire placed them in a family (*Cebrionides*) distinct from the *Elateridæ*. Dr. Schwartz, in the "Genera

Insectorum," places them in the latter family. I do not concur without hesitation in this arrangement, but as the classification of the "Genera Insectorum" will no doubt be widely followed, I accept it.

This group, like the *Cebrionidae*, is easily distinguished from the true *Elateridae* by tibiæ dilated and of triangular form (of the fossorial type) and furnished with strong development of spines. It has not hitherto been reported as occurring in Australia. It is represented in my collection by two specimens, for which it is necessary to form two new genera.

NULLARBORICA, gen. nov.

Frons declivis; labrum fortiter transversum; antennæ sat fortiter serratæ, articulis 3<sup>o</sup> quam 2<sup>us</sup> multo longiori, 11<sup>o</sup> subappendiculato; prothorax a basi ad apicem angustatus, ad latera marginatus, margine (superne viso) sat continuo; prosternum antice truncatum, suturis sinuatis antice clausis postice nonnihil duplicatis; tarsi subtus haud laminati; coxæ intermediæ haud plane contiguæ; sulcus mesosternalis manifestus.

The characters cited above in combination distinguish this genus from those described in the "Genera Insectorum." It bears much superficial resemblance to *Antoligostethus*, but differs by its head obliquely declivous, the margins of its prothorax not bent down in the front part in such fashion as to be invisible from above, by the front of its prosternum more abruptly truncate and by its intermediate coxæ not in contact with each other but separated by a quite visible mesosternal cavity.

*N. concinna*, sp. nov. Rufo-brunnea; modice nitida; suprapilis brevibus suberectis sat dense vestita; antennis ultra prothoracis basin elongatis; capite crebre fortiter punctulato; prothorace quam trans basin latiori fere quarta parte breviori, supra sat æqualiter fere ut caput punctulato, antice modice angustato, margine antico bisinuato, lateribus fere rectis vix sinuatis, angulis posticis haud divaricatis intra marginem haud carinatis; scutello ovali; elytris quam prothorax plus quam triplo longioribus, sat fortiter striatis, interstitiis leviter convexis crebre minus subtiliter punctulatis, apice vix acuto fere rotundato; prosterno episternisque crebre subgrosse punctulatis; processu prosternali supra planato, postice abrupte declivi; coxis intermediis subcontiguis; sulco mesosternali manifesto; coxis posticis intus gradatim sat fortiter (sed supra trochanteres paullo magis fortiter) dilatatis; abdomine sat crebre sat fortiter punctulato;

tarsis posticis quam tibiæ vix brevioribus, articulis 1-4 gradatim brevioribus; unguiculis modice magnis. Long.,  $5\frac{1}{2}$  l.; lat.,  $2\frac{3}{5}$  l.

South-West Australia (Nullarbor Plains); given to me by Mr. French.

ANTOLIGOSTETHUS (gen. nov.).

Caput antice perpendiculare; labrum fortiter transversum; antennæ sat fortiter serratæ, articulis 3<sup>o</sup> quam 2<sup>us</sup> multo longiori, 11<sup>o</sup> subappendiculato; prothorax a basi ad apicem angustatus, ad latera marginatus, margine antice fortiter deflexo (superne viso haud perspicuo); prosternum antice rotundatim truncatum, suturis sinuatis antice clausis haud duplicatis; tarsi subtus haud laminati; coxæ intermediæ contiguæ.

The characters cited above will serve in combination to distinguish this genus from all those described in the "Genus Insectorum." It is probably nearest to the South African genus *Oligostethus*, Schw., but differs from it by, *inter alia*, the antennæ strongly serrate from the 3rd joint inclusive, the strongly transverse labrum, and the prosternal sutures not open in front.

A. *lucidus*, sp. nov. Brunneo-testaceus; sat nitidus (præsertim pronotum); supra pilis brevibus erectis sat dense vestitus; antennis ultra prothoracis basin elongatis; capite crebre fortiter punctulato; prothorace quam trans basin latiori parum breviori, supra in disco sparsius subtilius (quam caput multo minus crebre multo minus fortiter) latera summa versus magis fortiter punctulato, antice sat fortiter angustato, margine antico rotundatim sat fortiter producto, lateribus fere rectis nonnihil sinuatis, angulis posticis haud divaricatis intra marginem haud carinatis; scutello ovali; elytris quam prothorax circiter triplo longioribus, sat fortiter striatis, striis latera versus fortiter punctulatis, interstitiis parum convexis sat crebre minus subtiliter punctulatis, apice vix acuminato fere rotundato; prosterno crebre fortiter, episternis sparsim subtilius, punctulatis; processu prosternali supra concavo, postice abrupte declivi; coxis intermediis contiguis; coxis posticis intus gradatim sat fortiter dilatatis; abdomine sat crebre sat fortiter punctulato; tarsis posticis quam tibiæ paulo brevioribus, articulis 1-4 gradatim brevioribus; unguiculis modice magnis. Long.,  $5\frac{1}{4}$  l.; lat.,  $1\frac{1}{2}$  l.

North-West Australia; Roebuck Bay.